

Remarks

Claims 1, 7-9, 13, 15, and 17-29 are pending in the present application.

35 U.S.C. § 112, first paragraph

Claims 1, 3, 7-9, 13, 15, and 17-29 were rejected under 35 U.S.C. 112, first paragraph, because the Office action finds the independent claim 1 contains subject matter which was not described in the specification in such a way as to enable any person skilled in the art to make and use the invention commensurate in scope with the claim. Claim 3 has been cancelled. Claim 1 has been amended to limit that the second DNA sequence having a transmembrane domain sequence of BP-80 and a cytoplasmic tail sequence of α -TIP. Claim 1 has been further amended to require that the promoter is a glutelin Gt1 promoter. The Office action explicitly admits that such an embodiment is enabled by the specification. Therefore, the applicant respectfully requires the Examiner to withdraw the rejection in view of the amendments.

Claim 26 is further rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement, because of the employment of vector pSB130 or pBI121 in the claimed method. The Office action notes that binary vector pBI121 was available to the public at the time of filing the present application. It finds, however, vector pSB130 was not readily available to the public at the time of filing. Claim 26 has been amended to delete pSB130. Therefore, the applicant respectfully submits that the rejection has been overcome.

35 U.S.C. § 103 (Non-obviousness)

All pending claims 1 7-9, 13, 15, and 17-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jiang et al. (The Journal of Cell Biology, 143:1183-1199, 1998, the “Jiang reference”) in view of Altenbach et al. (Plant Molecular Biology, 13:513-522, 1989, the “Altenbach reference”) and Goddijn et al. (Trends Biotechnol. 13:379-387, 1995, the “Goddijn reference”). Claims 1 and 26 have been amended as noted above; claims 7-9, 13, 15, and 17-29 all depend from claim 1, either directly or indirectly.

The Office action holds that because the Goddijn reference allegedly teaches the importance of using seeds as bioreactors in expressing a protein of interest, it would have been

obvious for one of the ordinary skill in the art to express any protein of interest in seeds by modifying the construct of the Jiang reference with any seed-specific promoter including one taught by the Altenbach reference to produce a foreign protein of interest at commercial scale with reasonable expectation of success.

Claim 1 has been amended by limiting the CT sequence being derived from α -TIP. Applicant respectfully submits to the Examiner that the construct of claim 1 is a very special construct having the α -TIP CT sequence which would be particularly useful in bypassing the Golgi functions that generate complex N-glycans (please see page 13, lines 10-11 of the Specification as originally filed). Therefore, the protein of interest is not any protein of interest but should be one being directed to the PSV crystalloid via a direct ER-PSV pathway.

An appropriately selected promoter such as the seed-specific phaseolin promoter would allow the expression of foreign proteins exclusively in seeds. However, the structure of a seed, being an organ rather than a cell, is very complicated, and the targeting mechanism of a foreign protein in the seeds was not known when the present application was filed (please see page 14, lines 3-4 of the Specification).

There is no teaching or suggestion in the prior art of record (including the Jiang reference) that proteins expressed in seeds with a seed specific promoter can be successfully directed by the α -TIP CT sequence bypassing the Golgi into a PSV crystalloid. Therefore, it would not have been obvious for one of ordinary skill in the art to reasonably expect the success of the claimed invention in plant seeds.

Moreover, to expedite the prosecution process, Claim 1 has been voluntarily amended without prejudice to limit the promoter to "a glutelin Gt1 promoter." None of the references, either alone or in combination, teaches or suggests such a promoter. As further discussed below, it would not be obvious for one of ordinary skill in the art to modify the construct of the Jiang reference with the particular glutelin Gt1 promoter and reasonably expect the success of the modification. And for this reason alone, claim 1 is not obvious over the prior art of record.

It is known in the art that even the same promoter can provide totally different expressions between the seeds of different species, let alone different promoters. For example,

Application No. 10/783,620
Amendment dated July 20, 2007
In response to Office Action Mailed: March 22, 2007

the application provides, “only soluble YFP was detected in tobacco seeds while intact full-length membrane reporter protein was detected in rice seeds” (see page 17, paragraph 54 of the Specification as originally filed). Example 4 of the present application further provides that Constructs C and D under the control of the Gt1 promoter were used in the transgenic rice, and therefore unexpected results were produced using the Gt1 promoter. Therefore, the DNA construct of claim 1 having a glutelin Gt1 promoter is completely different and not obvious over the construct of the prior art.

Therefore, claim 1 is not obvious over the Jiang reference in view of the Altenbach reference and the Goddijn reference, and is thus allowable.

All other pending claims (7-9, 13, 15, and 17-29) are dependent on claim 1, either directly or indirectly. Therefore, they are patentable over the Jiang reference in view of the Altenbach reference and the Goddijn reference at least for the same reason as for claim 1.

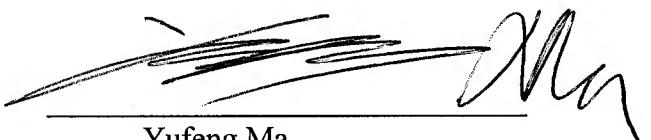
Application No. 10/783,620
Amendment dated July 20, 2007
In response to Office Action Mailed: March 22, 2007

Conclusion

In light of the above amendments and remarks, the Examiner is respectfully requested to reconsider the present application, withdraw the rejections, and prepare a Notice of Allowability allowing all the pending claims (1, 7-9, 13, 15, and 17-29).

The payment of fee for a one-month extension of time accompanies this paper. The Commissioner is hereby authorized to charge any additional fees which are presently required, or credit any overpayment, to Deposit Account No. 13-0017.

Respectfully submitted,



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